

RATNER, S.I., prof. (Moskva)

Typhoid fever. Med. sestra 20 no.6:8-14 Je '61.  
(TYPHOID FEVER)

(MIRA 14:7)

RATNER, Sh.I., prof.

Interprovince Scientific Conference of Therapeutists of the Far  
East and Eastern Sibiria. Sov. med. 25 no.11:153-155 N '61.  
(MIRA 15:5)

(THERAPEUTICS--CONGRESSES)

RATNER, S.I.; KHUDYAKOVA, G.K. (Moskva)

Pulmonary form of smallpox. Klin.med. no.4:51-59 '62. (MIRA 15:5)

1. Iz infektsionnogo otdeleniya (nauchnyy rukovoditel' - prof. S.I. Ratner) i rentgenologicheskogo otdeleniya (nauchnyy rukovoditel' - zasluzhennyy deyatel' nauk prof. S.A. Raynberg) Bol'nitsy imeni S.P. Botkina.  
(SMALLPOX) (LUNGS--DISEASES)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PROCESSES AND PROPERTIES INDEX

9

Comparison of mechanical properties of steel U-7 in tension, torsion, and compression. S. L. Hutter. *Zentralblatt* *Lab.* 12, 227-32 (1940). The plasticity of tempered steel U-7 brought to a low temp. is not revealed in tension tests, but is observed in torsion tests and, especially, in compression tests. Therefore, torsion and compression tests are recommended for the evaluation of the max. plasticity of steel with a martensitic structure. Plastic deformation preceding the destruction of the sample structure increases sharply the resistance to tear (from 75.0 to 152.5 kc./sq. mm.). Ten references.

W. R. Hunt

ASME - METALLURGICAL LITERATURE CLASSIFICATION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

RATNER, S. I.

11 20735

USSR/Metals

Mar 1967

Steel - Hardness  
Steel - Deformation

"The Role of Deformation in the Hardening of Materials," S. I. Ratner, Candidate in Technical Sciences, 8 pp

"Tekh Vol Flota" No 4

The use of slight shrinkage (5 - 10%) with subsequent tempering at 100° significantly increases the limit of stability and resistance to destruction of 30KHGSA steel (previously worked up to average hardness). In this condition steel possesses a sufficiently high pliability and toughness.

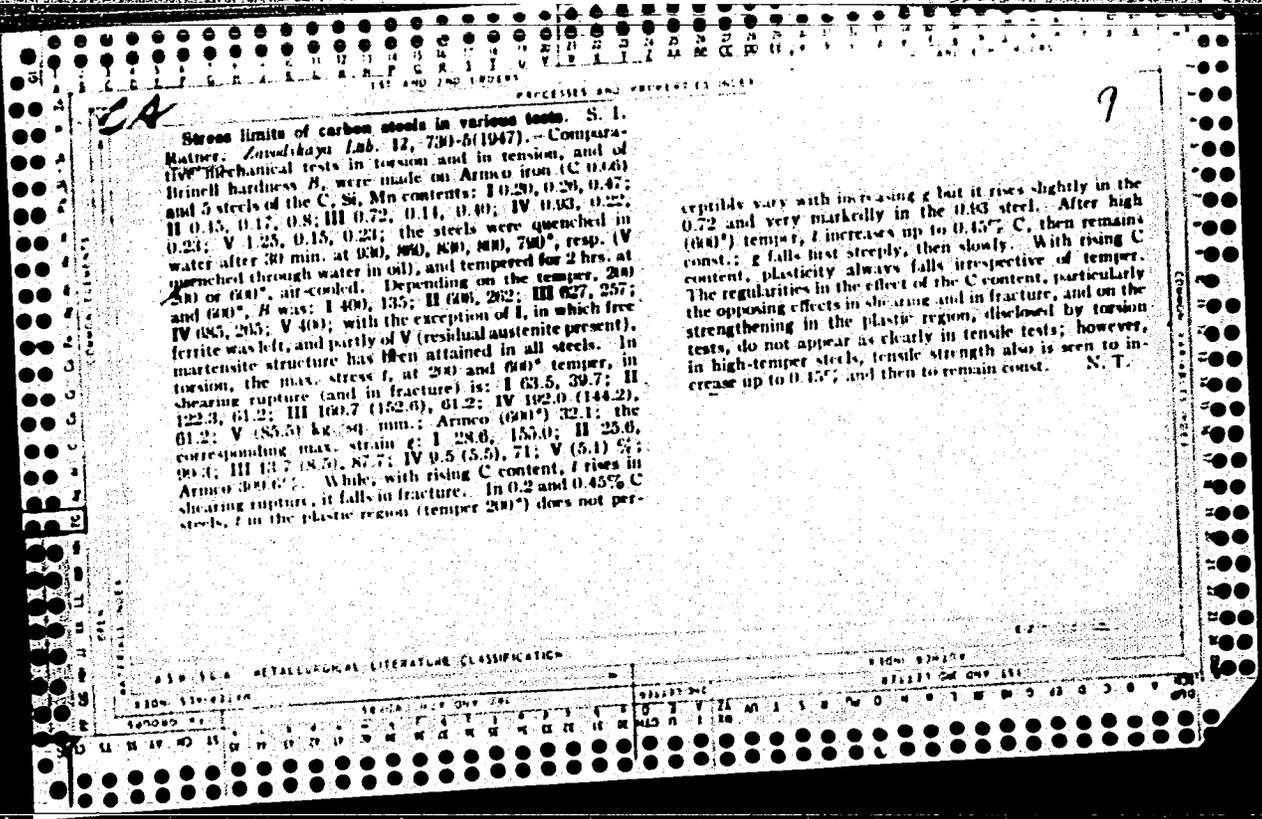
ES

29735

CA

1

A uniform theory of strength [of materials]. S. I. Matrey.  
*Vestnik Leningrad. Tekh. 1947*, No. 7, 211-32; (*Ann.  
Zeml. 1949*, 792; cf. C. I. 66, 79). A discussion of a theory  
of strength of materials according to which it should be pos-  
sible from the results of simple tests (as that of tensile  
strength) to predict the behavior of a material under com-  
plicated stresses.  
M. G. Moise



USAR/Metals  
Hardening

Oct 48

"Problem of Increasing the Fatigue Limits by Means of Surface Cold Hardening," S. I. Ratner, I. I. Zakharov, All-Union Inst of Avn Materials, 6 pp

"Zavod Lab" Vol XIV, No 10 - p 1244-6

Shows that one of the basic causes for increasing fatigue limits by subject treatment is the accompanying increase in resistance of outer layers to failure. Improvement of the microgeometry of the surface is another cause. Residual compressive stress can explain the increase of fatigue limits only in cases

28/497106

USAR/Metals (Contd)

Oct 48

where axial and tangential tension differ considerably with the size. Greatest increase is in materials of metastable structure, which decomposes during the process of cold hardening.

28/497106

LATNER, S. I.

B

13

Variations in the Mechanical Properties of Metals Under Hydrostatic Pressure. (In Russian) S. I. Batner. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 19, Mar. 1949, p. 108-111.

The above was investigated for Cu, Mg and Mg alloys, Be bronze, a cast Al alloy, and Si-Cu-Mg-Zr alloys. Tabulated and charted data indicate that, under the influence of hydrostatic pressure, not only tensile strength and yield point, but also resistance to plastic deformation is altered. The amount of the change is related to the structure of the metal.

*A. U. Inst. Aviation Materials*

*Evaluation B-79294*

AS 6-31.6 METALLURGICAL LITERATURE CLASSIFICATION

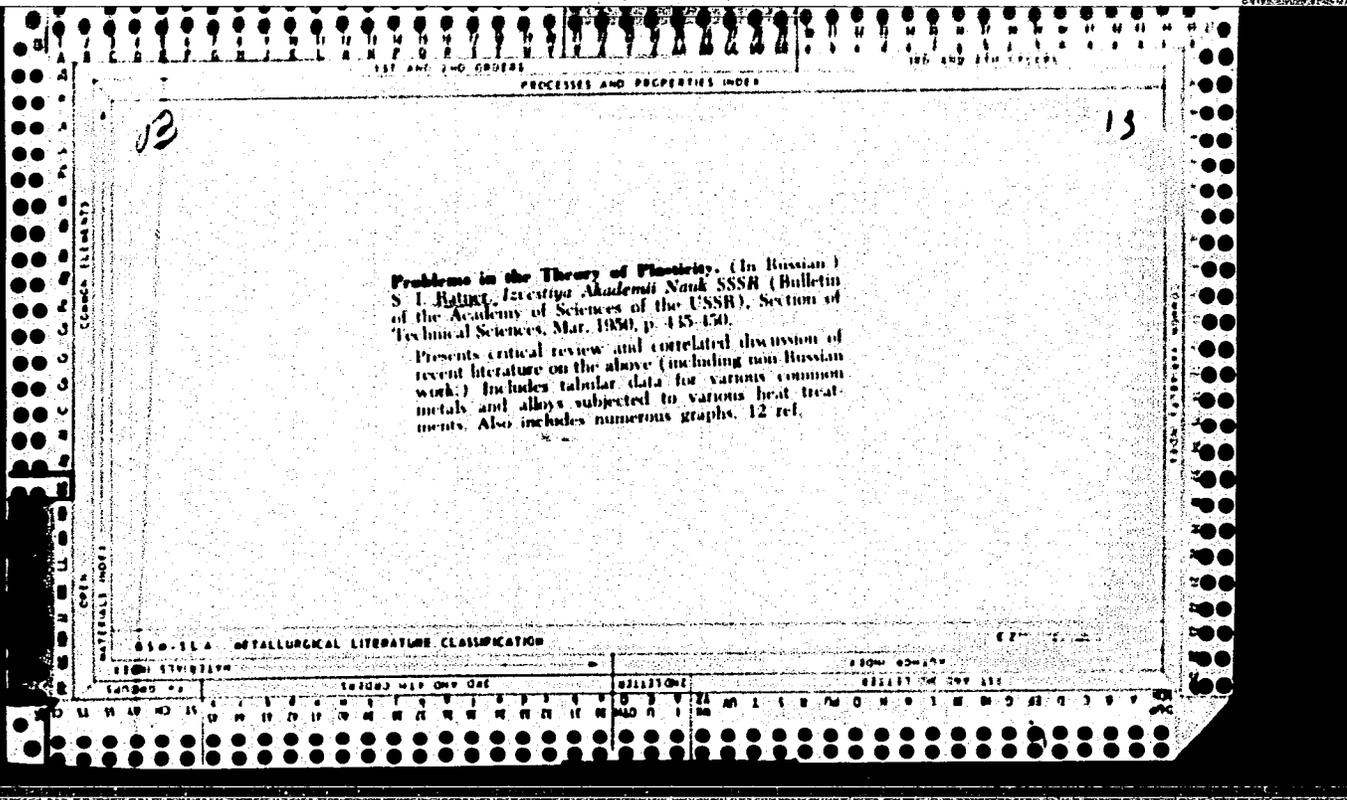
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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M. A.

1.

**Experimental Check of the Fundamental Law of the Plasticity Theory.**  
S. T. Kishkin and S. I. Ratner (*Zhur. Tekhn. Fiziki*, 1949, 19, (3), 412-420; *Appl. Mechanics Rev.*, 1950, 3, 77).--(In Russian). The object of the tests was to establish the relation between the yield stresses in shear ( $\tau_y$ ) and in tension ( $\sigma_y$ ) for various materials.  $\tau_y$  was defined as the shear stress at which the permanent set is 0.3% (which corresponds to 0.2% permanent set in tension) and was determined graphically. The ordinates of the stress-strain diagram were calculated according to the Mádai-Ludwig formula  $\tau = (2\tau^3)^{-1}(M - \sigma\epsilon/c)$  (The second term in the parentheses taking account of the strengthening effect of plastic deformation). The yield stress in tension  $\sigma_y$  was defined as the stress at which the permanent set is 0.2%. The ratio  $\tau_y/\sigma_y$ , which according to Saint Venant has a value of 0.5, and according to the theory of Haber-Mises a value of 0.577, was found to vary from 0.25 for magnesium alloys to 0.74 for high-quality heat-treated steel. For pure metals with cubic crystal lattice (copper, iron, and aluminum) the ratio  $\tau_y/\sigma_y$  is 0.45-0.49. For pure metals with hexagonal lattice the

ratio is very low, being 0.27 for pure magnesium. Annealed steel gives a value 0.5, whereas heat-treated steel can have a value as high as 0.7-0.8. The mean value for aluminium alloys is 0.4, but some cast aluminium alloys give 0.67. K. and R. have also determined the value of the yield stress in torsion from the conventional formula  $\tau = 16M/\pi d^3$ , which was found to be 20-30% higher than the correct value calculated from the M&L-Ludwig formula.



RATNER, S. I.

PA 160T66

USSR/Metals - Stress Analysis  
Strength, Testing

Apr 50

"Modification of the Proportional Limit and Yield Point Under Repeated Loading," S. I. Ratner, Yu. S. Danilov, 8 pp

"Zavod Lab" Vol XVI, No 4 - p-468-75

Gives methods and results of determining Bauschinger effect for several steels, pure aluminum, aluminum alloys, pure copper, brass and magnesium alloys in cases of repeated alternating loads and in cases of repeated loading of same sign.

160T66

KORMER, I. M. - tekhnik 1. RATNER, S. I. - inzh.

Nauchno-issledovatel'skiy institut po stroitel'stvu Ministerstva neftyanoy  
promyshlennosti

RAZRABOTKA TEKHNologii PROIZVODSTVA I IZGOTOVLENIYA GIPSOVYKH ISDELIY METHODOM  
NASYSHCHENIYA GIPSA BODOY PON DAVLENIYEM

Page 110

SO: Collection of Annotations of Scientific Research Work on Construction, com-  
pleted in 1950, Moscow, 1951

USSR/Physics - Metals, Scale Effect in Testing

FD 366

Card 1/1

Author : Plekhanova, N. G. and Ratner, S. I.

Title : Scale effect in plastic materials

Periodical : Zhur. tekhn. fiz. 24, 445-453, Mar 1954

Abstract : Studies the effect of scale factor in test specimens of diameters from 5 to 40 mm. Results of testing for mechanical properties are obtained for copper, aluminum and several grades of steel, mainly in hardened and high-tempered state. Seven references, all USSR, 1936-1950. Tables, graphs.

Institution :

Submitted : August 1, 1953

RATNER, S. I.

USSR/ Metallurgy - Strength of metals

FD-1041

Card 1/1 : Pub. 153 - 12/23

Authors : Kishkin, S. T. Nikolenko, V. V., and Ratner, S. I.

Title : Strength of metals in contact with melted solder

Periodical : Zhur. tekhn. fiz., 24, 1455-1466, Aug 1954

Abstract : Conclude that brittle fracture of steel under the influence of melted solder occurs in the presence of definite elastic elongation, and that the tensile stress necessary for this depends upon the composition of the solder and also upon the duration of contact of the stressed steel with the solder and upon the composition of the steel itself. Observe that deposition of solder on non-stressed steel does not lower its resistance to fracturing. Four references, one USSR (Ya. M. Potak and O. I. Magazanik, Termicheskaya obrabotka i svoystva staley dlya samoletostroyeniya (Heat treatment and properties of steels for air-craft construction), Defense Press, No. 154, 1952).

Institution : - -

Submitted : 16 December 1953

The review of High-Temperature Materials for High-Speed Aircraft -- A Symposium, SAE, New York, 1955, by S. I. Ratner, reports that "the compendium contains a series of articles which are undoubtedly of interest to engineering-technical workers engaged in the design and production of jet engines, high-speed aircraft, and unmanned flying apparatus. The basic value of the compendium is in the fact that it presents information on materials used in US supersonic aviation and that it also contains valuable reference data. It is recommended that appropriate journals abstract the articles in this compendium."

S4M-1305

SOV/124-57-3-3714

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 3, p 152 (USSR)

AUTHOR: Ratner, S. I.

TITLE: An Evaluation of the Strength of Metals in a State of Compound Stress Due to Static Loading (Otsenka prochnosti metallov v usloviyakh slozhnogo napryazhennogo sostoyaniya pri staticheskom nagruzhenii)

PERIODICAL: V sb.: Povysheniye dolgovechnosti mashin. Moscow, Mashgiz, 1956, pp 5-20

ABSTRACT: The paper analyzes the effect of some of the most effective methods for increasing the strength of parts fabricated from high-strength materials. The following methods pertain to the above category: Isothermal treatment, the creation of a plastic layer in the vicinity of stress concentrations by means of local high-frequency tempering, and a treatment that improves the quality of the surface layer of a material (sandblasting). The results of tensile and torsional tests in a high-pressure environment are adduced. An analysis is made of the relationship between the strength of a part and its size. The author points out the effect of the particular machining procedure used in the fabrication of test specimens upon their test results.

K. K. Likharev

Card 1/1

Ratner, S. I.

*Stovet*  
*MS*

<sup>16</sup>  
Failure under Repeated Loads. S. I. Ratner. (Doklady Akad. Nauk. SSSR., 1956, 106, (2), 220-227). Four steels were used and notched test-pieces were examined. Three topics are discussed: whether tensile strength or resistance to brittle fracture is more important, whether brittle fracture resistance changes and how it varies with the character of the material, and what is the effect of time during repeated loading tests.

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18(7); 24(6)

PHASE I BOOK EXPLOITATION

SOV/2701

Ratner, Sof'ya Isaakovna

Razrusheniye pri povtornykh nagruzkakh (Failure at Cyclic Loads) Moscow, Oborongiz, 1959. 351 p. Errata slip inserted. 3,000 copies printed.

Reviewer: S. V. Serensen, Member, Academy of Sciences, UkrSSR; Ed.: T. K. Zilova, Candidate of Technical Sciences; Ed. of Publishing House: A. G. Kuznetsova; Tech. Ed.: V. P. Rozhin; Managing Ed.: A. I. Sokolov, Engineer.

**PURPOSE:** The book is intended for technical personnel in the fields of mechanical testing and mechanical engineering. It may also be useful to designers confronted with problems of selecting materials.

**COVERAGE:** The book presents experimental data on problems of strength at cyclic loading. Special attention is paid to the problem of strength at heavy loads of low frequency. Topics discussed include the significance of the time factor at cyclic loading, the change of physical and mechanical properties due to cyclic loading, the effect of structural factors

Card 1/5

Failure at Cyclic Loads

SOV/2701

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Card 5/5

GO/fal  
1-7-59

STEEL I BOOK REPRODUCTION 807/3175

Abstracts book 8088. Institute of Metallurgy and A.S. Systems

Development of alloy, especially corundum, for stainless steels 72-74  
Sokolov, I.A. (Pillager of Metals) Materials of the Conference on Pillager  
of Metals, September 22-28, 1958) Moscow, 1960, 117 p. 3,500 copies printed.

Step, M.I. I.A. Orlin, Corresponding Member, Academy of Sciences USSR, Ed. of  
Publishing House A.S. Chernov, Tech. Ed. I.J. Drobizhin.

Requirements. This collection of articles is intended for metallurgical engineers,  
metallurgists, and scientific research workers.

Contents: The collection contains discussions relating to fatigue failure of  
metals, fatigue in finished parts, and methods for testing endurance. Included  
are a critical review of existing theories on metal fatigue, some data on  
physical regularity patterns, and features of steel failure caused by fatigue.  
Possibilities for applying a new criterion to the notch sensitivity of metals  
and high-strength steels are investigated. The mechanism of failure due to  
corrosion fatigue of metals is discussed along with pertinent experimental  
data. Also presented are the results of testing the fatigue strength of such  
metal parts as large-size plates and various parts of machine tool in the  
platinum industry. Problems involved in testing metals for fatigue are  
examined. No preconditions are mentioned. Each article is accompanied by  
bibliographic references, most of which are Soviet.

See also 11-9-60, 11-9-60, 11-9-60, 11-9-60, 11-9-60, 11-9-60, 11-9-60,  
and 11-9-60, 11-9-60, 11-9-60, 11-9-60, 11-9-60, 11-9-60, 11-9-60,  
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Shcherbakov, A.I., V.S. Shcherbakov, and A.I. Petrov. Short-Time Tests for  
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807/3175  
11-9-60

BERESNEV, B.I.; VERESHCHAGIN, L.P.; RYABININ, Yu.N.; LIVSHITS, L.D.;  
RATNER, S.I., doktor tekhn.nauk, otv.red.; GUROV, K.P., red.  
izd-va; LKBEDEVA, L.A., tekhn.red.

[Some problems in large plastic deformations of metals at  
high pressures] Nekotorye voprosy bol'shikh plasticheskikh  
deformatsii metallov pri vysokikh davleniakh. Moskva, Izd-vo  
Akad.nauk SSSR, 1960. 79 p. (MIRA 13:7)  
(Deformations (Mechanics)) (Metallography)  
(High-pressure research)

ACC NR: AN6027196 (N) SOURCE CODE: UR/9034/66/000/064/0003/0003

AUTHOR: Ratner, Sh. (Professor; Khabarovsk)

ORG: none

TITLE: Hemorrhagic nephrosonephritis

SOURCE: Meditsinskaya gazeta, 09 Aug 66, <sup>no. 64,</sup> p. 3, col. 1-6

TOPIC TAGS: cardiovascular system, digestive system, ~~hematology~~,  
Omsk fever, infective disease

ABSTRACT:

Indices of Omsk fever are given to aid in its diagnosis. Three stages are noted: fever (rising rapidly to 39—40°C with normalization from the fourth to seventh days); deterioration; and recovery (from the 10—12th days). The first days are characterized by infectious-toxic phenomena: severe hyperemia, expansion of sclerotic vessels, swollen eyelids, and dermal hemorrhages over the body and extremities. Hemorrhagic rash appears toward the end of the fever and lasts several days. The cardiovascular system, digestive tract, and kidneys are most seriously affected. Brachycardia, noted at the end of the first and during the second

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ACC NR: AN6027196

stage, is replaced by tachycardia during recovery. Heart limits are usually unchanged, although extrasystole, myocardial changes, acute cardiac or vascular insufficiency, and hemorrhagic pneumonia may develop. Dyspeptic phenomena, sickness with abdominal palpitation, high temperature, and hyperleukocytosis with a deep neutrophilic shift to the left indicate perforating peritonitis. The urine syndrome is noted. Pain occurs in the perirenal area on the second to third day; anuria replaces oliguria in the second stage; diuresis increases from the 9th—12th days, reaching polyuria at the beginning of recovery; chloride concentration in the urine decreases sharply in the first and second stages and is also, unexpectedly, lower in the blood. Glomerular filtration is disrupted from the first days and reaches a maximum in the second stage, while canalicular reabsorption decreases later and lasts longer. Nervous-system disruptions are mostly insignificant. Hemoglobin and erythrocyte content often increase, and thrombocyte content is lowered at first, but not to a critical level. Some moderate leukopenia in the first two days, and leukocytosis and hyperleukocytosis, and a sharp neutrophilic shift from the third day, are noted. Myelogram analysis shows a tendency towards erythropoietic depression, and,

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ACC NR: AN6027196

at the height of illness, an increased amount of young bone marrow cells. Blood-sugar content is somewhat raised in most cases. Unlike nephritis and nephrosis, hypocholesteremia is noted in Omsk fever. At the height of illness, ascorbic acid concentration is lowered, permeability is disrupted, and capillary resistance is lowered.  
[WA-50; CBE No. 11]

SUB CODE: 06/ SUBM DATE: none/

Card 3/3

RATHER, Shakhno Izratlevich, prof.; SIMKHO, Kh.S., red.; KAYDALOVA,  
M.D., tekhn. red.

[Hemorrhagic nephroso-nephritis; hemorrhagic fever with a  
renal syndrome] Gemorragicheskii nefrozo-nefrit; gemorragi-  
cheskaia likhoradka s pochechnym sindromom. Khabarovsk, Kha-  
barovskoe knizhnoe izd-vo, 1962. 317 p. (MIRA 15:8)  
(HEMORRHAGIC FEVER)

RATNER, Sh.I., prof.

Interprovincial Scientific Conference of Theraputists of the  
Far East and Eastern Siberia in Khabarovsk. Biul. uch. med.  
sov. 2 no.5:31-34 S-0 '61. (MIRA 14:11)  
(MEDICAL RESEARCH--CONGRESSES)

PAVLOV, S. I.

"CERTAIN NEW WAYS OF RATIONLIZATION OF SYSTEMS OF FEEDING PLANTS,"  
VEST. AN Nauk May 1950, p. 70

Inst of Plant physiology in K. A. Timiryazev, Acad. Sci. USSR

L 18412-66: EWT(m)/EWP(j)/I/ETC(m)-6 WW/DJ/RM  
ACC NR: AP6003417

SOURCE CODE: UR/0190/66/008/001/0088/0093

AUTHORS: Ratner, S. B.; Lur'ye, Ye. G.

79  
68

ORG: Scientific Research Institute for Plastics (Nauchno-issledovatel'skiy institut plasticheskikh mass)

B

TITLE: Relationship between wear and thermochemical stability of plastics

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 1, 1966, 88-93

TOPIC TAGS: polymer, polymer structure, polymer rheology, physical chemistry, tensile strength, thermal fatigue, mechanical fatigue

ABSTRACT: The effect of a number of stabilizers on the wear and thermochemical stability of several polymers was determined to extend the investigation of the authors (Dokl. AN SSSR, 166, 151, 1966). The polymers studied were: polyamide 68, high pressure polyethylene, polyvinylchloride, polycarbonate, polystyrene, polyformaldehyde, and polyamide AK-7. The experimental results are presented in graphs and tables (see Fig. 1). The experimental data were processed according to the equations of S. B. Ratner and G. S. Klitenik (Zavodsk. lab., 1959, No. 11, 1375). It is concluded that the wear stability of polymers may be

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15  
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UDC: 678.01:53+678.01:54

2

L 18412-66  
ACC NR: AP6003417

Fig. 1. The effect of aging of poly-formaldehyde under the influence of UV-light (1,2) and heat (3,4) on the magnitude of wear (1,3) and tensile strength (2,4) (Stabilizer santovar 0).



increased by the introduction of suitable stabilizers. The authors thank M. S. Akutin, K. N. Vlasova, V. V. Gur'yanova, V. V. Kovrig, G. S. Klitenik, B. M. Kovarskaya, I. I. Levantovskaya, B. I. Pashenin, and P. M. Tanunina for specimens of polymers and for help received during experimental work. Orig. art. has: 3 tables, 1 graph, and 3 equations.

SUB CODE: 11, 09/ SUBM DATE: 16Feb65/ ORIG REF: 020

Card 2/2 *ja*

L 18911-66 ENT(m)/ENP(j)/T/ETC(m)-6 WW/DJ/RM

ACC NR: AP6008055

SOURCE CODE: UR/0020/66/166/004/0909/0912

AUTHOR: Ratner, S. B.; Lur'ye, Ye. G.

61  
54  
8

ORG: none

TITLE: Abrasion of polymers as a kinetic thermoactivation process

SOURCE: AN SSSR. Doklady, v. 166, no. 4, 1966, 909-912

TOPIC TAGS: polymer, material failure, mechanical fatigue

ABSTRACT: The wear of a <sup>5</sup>polymer is analyzed from the standpoint of the molecular-kinetic theory which treats failure not as a critical event but as a gradual process. The effect of temperature and load on the wear of elastic plastics (high-pressure polyethylene<sup>5</sup> and plasticized polyvinyl chloride<sup>19</sup> and polymethyl methacrylate)<sup>5</sup> is discussed. It is shown that fatigue abrasion occurs via a thermoactivation mechanism and that it is a multiple process in both its micro- and macroscopic aspects. Abrasive wear corresponds to a critical condition and consists of a single event in both aspects. The relationships arrived at permit one to treat wear from the standpoint of the fluctuational theory of failure, to establish the character-

UDC: 678.01 : 53

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L 18911-66

ACC NR: AP6008055

7

istics of wear as a complex form of failure, and to determine the characteristics of the mechanical behavior of polymers. The paper was presented by Academician V. A. Kargin 11 May 1965. The authors thank V. A. Kargin, L. A. Igonin, V. V. Kovrige, and Yu. M. Malinskiy for reviewing the results, and N. Ganul and S. Kovaleva for assistance in the experiments. Orig. art has: 4 figures, 3 formulas.

SUB CODE: 11, 20    SUBM DATE: 06May65/    ORIG REF: 013/    OTH REF: 000

Card 2/2 mc

21(8)

SOV/89-7-3-7/29

AUTHORS: Bibergal', A. V., Korotkov, M. M., Ratner, T. G.

TITLE: Some Principles of Calculating and Using Strong Radiation Sources

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 3, pp 244-251 (USSR)

ABSTRACT: It is shown experimentally that in many cases approximated calculations are justified for the dose rate and the build-up factor of  $\gamma$ -systems, especially in the case of short distances between source and the irradiated object ( $\leq 100$  cm). The experiments are carried out with point, linear, and cylindrical  $\text{Co}^{60}$ - and  $\text{Cs}^{137}$ -sources of various thicknesses. The experimentally found results are graphically recorded and compared with the theoretically calculated curves. On the whole good agreement was found. The following measuring results are shown graphically: Build-up factor for water and the  $\gamma$ -radiation of point  $\text{Co}^{60}$ - and  $\text{Cs}^{137}$ -sources, dependence of the dose rate of a linear  $\text{Co}^{60}$ -source in water on the distance between the source and the place of irradiation, comparison of the dose rate of a linear source and the dose rate in the center of a

Card 1/3

SOV/89-7-3-7/29

Some Principles of Calculating and Using Strong Radiation Sources

cylindrical  $\text{Co}^{60}$ -source in water. Dependence of the dose rate of a linear source ( $\text{Co}^{60}$ ) in air on the distance between source and place of irradiation. Dependence of the dose rate within a cylindrical source ( $\text{Co}^{60}$ ) in the air on the source diameter. Dependence of the dose rate in air within a chamber for objects ( $d = 30 \text{ cm}$ ) on the diameter of the  $\text{Co}^{60}$ -source located in water. Dependence of the dose rate in water within a chamber for objects ( $d = 30 \text{ cm}$ ) of the dose rate of the  $\text{Co}^{60}$ -source in water. Dependence of the dose rate in water within a chamber for objects ( $d = 30 \text{ cm}$ ) on the diameter of the  $\text{Co}^{60}$ -source, which is in the air. From all measurements and comparisons between experimental and theoretical calculations the following conclusions may be drawn: for all practical cases of calculating  $\gamma$ -systems it is sufficient to take multiple scattering into account by means of the build-up factor, which may be represented by the sum of two exponential functions. If a uniform dose field is required in irradiation, the most rational method is to homogenize the dose field of extended sources by means of

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Some Principles of Calculating and Using Strong Radiation Sources

additional filters. These filters must, in each case, be calculated separately. If objects with a density  $\leq 1$  and a thickness  $< 40$  cm are to be irradiated, the use of a  $Cs^{137}$  source is more productive than that of a  $Co^{60}$  source. There are 10 figures and 13 references, 8 of which are Soviet.

SUBMITTED: March 4, 1959

Card 3/3

1. Evaluation of nonuniformity in dosimetric substantiation of  
brachytherapy. Med. rad. 10 no.7:34-36 J1 '65. (MIRA 18:9)

I. Institut biologicheskoy fiziki AN SSSR, Moskva.

L 4210-66 ENT(m)

ACCESSION NR: AP5014071

UR/0241/65/000/005/0078/0081

615.849.7-015.35

AUTHOR: Bibergal', A. V. (Moscow); Ratner, T. G. (Moscow); Lipis, V. L. (Moscow) <sup>24</sup>B

TITLE: Dose distribution in rotation-convergent irradiation

SOURCE: Meditsinskaya radiologiya, no. 5, 1965, 78-81

TOPIC TAGS: irradiation dosimetry, irradiation apparatus, gamma radiation, radiotherapy <sup>19</sup>

ABSTRACT: The authors compared the dose distribution produced by a rotation-convergent gamma apparatus ("Vol'fram") newly developed in the USSR with that produced by other types of apparatus. Single-field irradiation makes it possible to avoid vital organs, but it does not ensure an efficient dose distribution. Tilting at a slight angle ( $\pm 30-45^\circ$ ) improves the dose distribution slightly, but tilting at a big angle ( $\pm 90^\circ$  or more) makes it very difficult to avoid irradiating vital organs. A rotation-convergent field of  $\pm 30^\circ$  along both axes ensures a more efficient dose distribution than in the above cases. The maximum dose reaches a greater depth and the decrease in dose toward the surface is steeper. Moreover, the possibility

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L 4210-66

ACCESSION NR: AP5014071

of preventing the irradiation of vital organs is virtually the same as for a static field. Distribution of the dose by the rotation-convergent method varies with the depth of the center of rotation and convergence. This distribution can be used to treat surface and shallow tumors. Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 27Aug64

ENCL: 00

SUB CODE: LS

NO REF SOV: 002

OTHER: 003

Card 2/2 DP

BIBERGAL', A.V.; BAYTER, T.G.; NIKULIN, Yu.P.; LIPIS, V.I.

Some problems in studying radiation parameters in powerful gamma apparatus used in radiation therapy: as exemplified by tests of the Vol'fram apparatus. Radiobiologia 5 no.1:140-146 '65.

(MIPA 18:3)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

SHEKHIMAN, Ya. L. and RATNER, T. G.

"Kinetics of Discoloration of a Water Solution of Methylene Blue Under the  
Action of X-rays" p.106

(Inst. Biological Physics, AS USSR)

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscow,  
Izd-vo AN SSSR, 1958. 330pp.  
Conference -25-30 March 1957, Moscow

AUTHORS: Sinayskiy, G. M., Ratner, T. V., Makarova, V. P., 79-11-4/56  
Gorin, Yu. A., Ivanov, V. S., Alferova, L. V.

TITLE: An Investigation of the Composition of the Hydrocarbons C<sub>6</sub> - the  
By-Products of the Catalytic Synthesis of Divinyl From Alcohol  
(Izucheniye sostava uglevodorodov C<sub>6</sub> - pobochnykh produktov katali-  
ticheskogo sinteza divinila iz spirta).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp. 2927-2931 (USSR).

ABSTRACT: The investigation of ethyl alcohol in divinyl over a catalyst repre-  
sents a complicated catalytic process which is accompanied by a con-  
siderable amount of side reactions. In spite of the informative pa-  
pers by S. V. Lebedev and Ya. A. Gorin in the field of the catalytic  
formation of the combined dienes (C<sub>n</sub>H<sub>2n-2</sub>) from alcohols, their bina-  
ry mixtures, and the mixtures of the alcohols with aldehydes and  
ketones with regard to the by-products, their composition is by far  
not sufficiently investigated. Of the insufficiently investigated  
by-products obtained on rectification of hydrocarbons the so-called  
hexylene-hexadiene fraction (boiling point 60-90°C) is the object of  
the authors' investigation. On further rectification the following  
were obtained beside other by-products. 1) hexadiene-1,3. 2) 3-

Card 1/2

An Investigation of the Composition of the Hydrocarbons  $C_6$  - the 79-11-4/56  
By-Products of the Catalytic Synthesis of Divinyl From Alcohol.

methylpentadiene 1,3. 3) cyclohexadiene-1,3. Thus the presence of the combined dienes. 1) hexadiene-1,3. 2) 3-methylpentadiene-1,3 and 3) cyclohexadiene-1,3 was determined in the hexylene-hexadiene fraction of the hydrocarbons, the by-products of the catalytic synthesis of divinyl from alcohol according to Lebedev, and the way of their formation was partially suggested. There are 19 references, 9 of which are Slavic.

ASSOCIATION: The Laboratory of the Factory SK and the Leningrad State University (Laboratoriya zavoda SK i Leningradskiy gosudarstvennyy universitet).

SUBMITTED: November 23, 1956.

AVAILABLE: Library of Congress.

1. Divinyl-Synthesis
2. Diene syntheses
3. Ethanol-Catalysis
4. Hydrocarbons-Analysis

Card 2/2

*RATNER, U.S.*

K-9

USSR/Optics - Physiological Optics

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 13163

Author : Ratner, U.S.

Inst :  
Title : Connection Between the Characteristics of Vision and Quantum Fluctuations of Light.

Orig Pub : Dokl. AN SSSR, 1955, 195, No 1, 90-93

Abstract : A new expression is proposed for the vision functions of the glass, based on the concept of the quantum theory of vision

$$\frac{\kappa^2 \alpha^2 B}{\kappa + 2(1 + \alpha_0/\alpha)^2(1 + B_0/B)} = f(B)$$

where  $\chi$  is the angular dimension of the smallest detail

Card 1/2

RATNER, V. A.

"Modification of the Laryngoscope," Vest. Oto-rino-laringol., No. 4, 1948. Mbr.,  
Otorhinolaryngological Clinic, Khar'kov Stomatol. Inst., -c1948-

RATNER, V.A., inzh.; DUBROVA, Ye.P., inzh.; VINOKUROV, A.A., inzh.;  
SHAYTANOV, G.S., inzh.

Designing and manufacturing prestressed reinforced large-span  
elements for concrete bridges. Transp. stroi. 8 no.2:23-26  
P '58. (MIRA 11:2)  
(Czechoslovakia--Bridges, Concrete)

RATNER, Venetsian Aleksandrovich

[Acute faucitis] Ostrye vospalenia zeva. Moskva, Medgiz,  
1959. 219 p. (MIRA 13:7)  
(THROAT--DISEASES)

BELYAYEV, D.R.; RATNER, V.A.

Analysis of genetic and phenotypic correlations in connection with  
some problems of breeding and evolution. Dokl. AN SSSR 140  
no.3:609-702 S '61. (MIRA 14:9)

1. Predstavleno akademikom I.I.Shmal'gauzenom.  
(GENETICS)

RATNER, V. Ya.

Mode of occurrence of oil in horizon 20 of the Tungor field  
(northern Sakhalir). Neftegaz. geol. i geofiz. no.10:13-15 '63,  
(MIRA 17:9)

1. Nauchno-issledovatel'skaya laboratoriya geologicheskikh  
kriteriyev otsenki perspektiv neftegazonosnosti Gosudarstvennogo  
geologicheskogo komiteta SSSR.

... (1975)

... determining the sequence of bands in the biochemical code ...

... The principle of connectivity of carrier. Probl. ...

... (1975)

RATNER, V.A. (Novosibirsk)

Elements of degeneration in the biochemical code. Probl. kib.  
no.10:195-203 '63.

(MIRA 18:4)

SOROIN, Dmitriy Zoltarevich; Editor, V.I., red.

[Putting Lenin's plan for the electrification of the  
country into practice] Osnovnye zadachi i realizatsiya plana  
elektrifikatsii strany. Moskva, Izdat', 1965. 77 p.  
(MIRA 18:8)

KABKOV, Yakov Ivanovich; RATNER, V.I., red.; NAUMOV, K.M., tekhn.  
red.

[Further efforts of the party organizations to improve the  
standard of living of Soviet workers] Rabota partiinykh or-  
ganizatsii po dal'neishemu povysheniiu blagosostoiania tru-  
diashchikhsia; lektsiia, pročitannaia v Vyshei partiinai  
shkole pri TsK KPSS. Moskva, Izd-vo VFSH i AON pri TsK KPSS,  
1962. 29 p. (MIRA 15:12)

(Cost and standard of living)

RATNER, V.Ya.

Comparisons of sandstone strata in the Okobykay series of the  
Okha-Ekhabi region on northern Sakhalin. Geol.nefti 1 no.10:40-46  
0 '57. (MIRA 10:10)

1. Tsentral'naya nauchno-issledovatel'skaya laboratoriya ob'yedineniya  
Dal'neft'.

(Sakhalin --Sandstone)

ALEKSEYCHIK, Stepan Nikolayevich; pri uchastii sleduyushchikh: GAL'TSEV-BEZYUK, S.D.; GHEDIN, K.I.; ZAYTSEV, S.M.; KIRICHEK, M.A.; KOZLOV, A.L.; PURKIN, L.B.; RATHER, V.Ya.; RATHOVSKIY, I.I.; RAKHMANOV, K.F.; TABOYAKOV, A.Ya.; TSITENKO, N.D.; GOLUBKOV, I.A., nauchnyy red.; KELAREV, L.A., vedushchiy red.; YASHCHURZHINSKAYA, A.B., tekhn.red.

[Geology and gas and oil potentials of northern Sakhalin]  
Geologicheskoe stroenie i gazonaftenosnost' severnoi chasti Sakhalina. Leningrad, Gos. nauchn. -tekh.izd.-vo neft. i gorno-toplivnoi lit-ry Leningr. otd-nie, 1959. 226 p. (Leningrad. Vsesoiuznyi neftianoi nauchno-issledovatel'skii geologorazvedochnyi institut. Trudy, no.135).

(Sakhalin--Petroleum geology)

(Sakhalin--Gas, Natural--Geology)

KATORGIN, Ivan Ivanovich, kand.istor.nauk; PETROV, S.M., prof., red.;  
KOSUL'NIKOV, A.P., kand.istor.nauk, red.; SHITOV, N.F., kand.  
istor.nauk, red.; RATNER, V.I., red.; NAUMOV, K.M., tekhn.red.

[Postwar struggle of the Communist Party for the reconstruction  
and development of the national economy, 1945-1953. Theme 16.]  
Bor'ba Kommunisticheskoi partii za vosstanovlenie i razvitie  
narodnogo khoziaistva v poslevoennye gody, 1945-1953 gg.; tema  
XVI. Moskva, Izd-vo VPSH i AON pri TsK KPSS, 1959. 90 p.

(MIRA 13:6)

(Communist Party of the Soviet Union) (Reconstruction)

ASTAPOVICH, E.A., dots., red.; GUSEV, K.V., kand. ist. nauk, red.;  
IVANOVA, R.S., red.; KACHURINA, A.V., red.; RATNER, V.I., red.;  
NAUMOV, K.M., tekhn. red.

[Development of the working class in the national Republics of  
the U.S.S.R.] Razvitie rabocheho klassa v natsional'nykh respubli-  
kakh SSSR. Moskva, Izd-vo VPSH i AON pri TsK KPSS, 1962. 309 p.  
(MIRA 15:6)

1. Moscow. Akademiya obshchestvennykh nauk.  
(Labor and laboring classes)

IVASHIN, Ivan Fedorovich; RATNER, V.I., red.; NAUMOV, K.M., tekhn.red.

[How the Soviet Union struggles for general and complete disarmament] Bor'ba Sovetskogo Soyuza za vseobshchee i polnoe razoruzhenie. Moskva, Izd-vo VPSH i AON pri TsK KPSS, 1960.  
52 p. (MIRA 13:8)

(Disarmament)

KAS'YANENKO, V.I.; KIM, M.P., prof., nauchnyy red.; RATNER, V.I.,  
red.

[Struggle of U.S.S.R. workers for technological independence from  
1926 through 1932] Bor'ba trudiashchikhsia SSSR za tekhnicheskuiu  
nezavisimost' promyshlennosti, 1926-1932 gg. Moskva, Izd-vo  
VPSH i AON pri TsK KPSS, 1960. 65 p. (MIRA 13:6)  
(Russia--Industries)

SHARAPOV, G.V.; ASTAPOVICH, Z.A., dotsent, nauchnyy red.; RATNER, V.I.,  
red.

[Beginning of the socialist reorganization in villages during  
the first years of the Soviet regime] Nachalo sotsialisticheskikh  
preobrazovaniy v derevne v pervye gody Sovetskoi vlasti. Moskva,  
Izd-vo VPSH i AON pri TsK KPSS, 1960. 86 p. (MIRA 13:6)  
(Agriculture)

VORONIN, V.N., nauchnyy sotrudnik; VONORNINA, L.D., nauchnyy sotrudnik;  
SKOCHINSKIY, A.A., akademik, redaktor; RATNER, V.I., redaktor;  
MURASHOVA, N.Ya., tekhnicheskii redaktor

[Ventilation of ore mines after blasting] Provetrivanie metalliche-  
skikh rudnikov posle vzryvnykh rabot. Moskva, Izd-vo Akademii nauk  
SSSR. Pt.2. [Instructions for the ventilation of stopes] Instruktsiia  
po provetrivaniyu ochestnykh vyrabotok. Pod nauchnym rukovodstvom i  
red. A.A.Skochinskogo. 1946. 104 p. (MLRA 9:9)

1. Institut gornogo dela (for Voronin, Vononina)  
(Mine ventilation)

KRAYCHIK, M.M., kand. tekhn. nauk; RATNER, V.S., kand. tekhn. nauk.

Vibrational strength of welded joints in low-alloy and low-carbon steel. Svar. proizvod. no. 2:18-22 P '58. (MIRA 11:2)

1. Tsentral'nyy nauchno-issledovatel'skiy institut Ministerstva putey soobshcheniya (for Kraychik). 2. Moskovskiy transportno-ekonomicheskiy institut (for Ratner).

(Steel alloys--Welding) (Welding--Testing)

ARBUZOV, B.A., akademik; ISAYEVA, Z.G.; RATHER, V.V.

Products of the autoxidation of  $\Delta^3$ -carene. Dokl. AN SSSR 174 no.3:  
583-586 S '60. (MIRA 13:9)

1. Nauchno-issledovatel'skiy khimicheskiy institut im. A.M. Butlerova  
pri Kazanskom gosudarstvennom universitete im. V.I. Ul'yanova-Lenina.  
(Carene)

PETRITSKAYA, L.I.; RAINER, V.Ya.

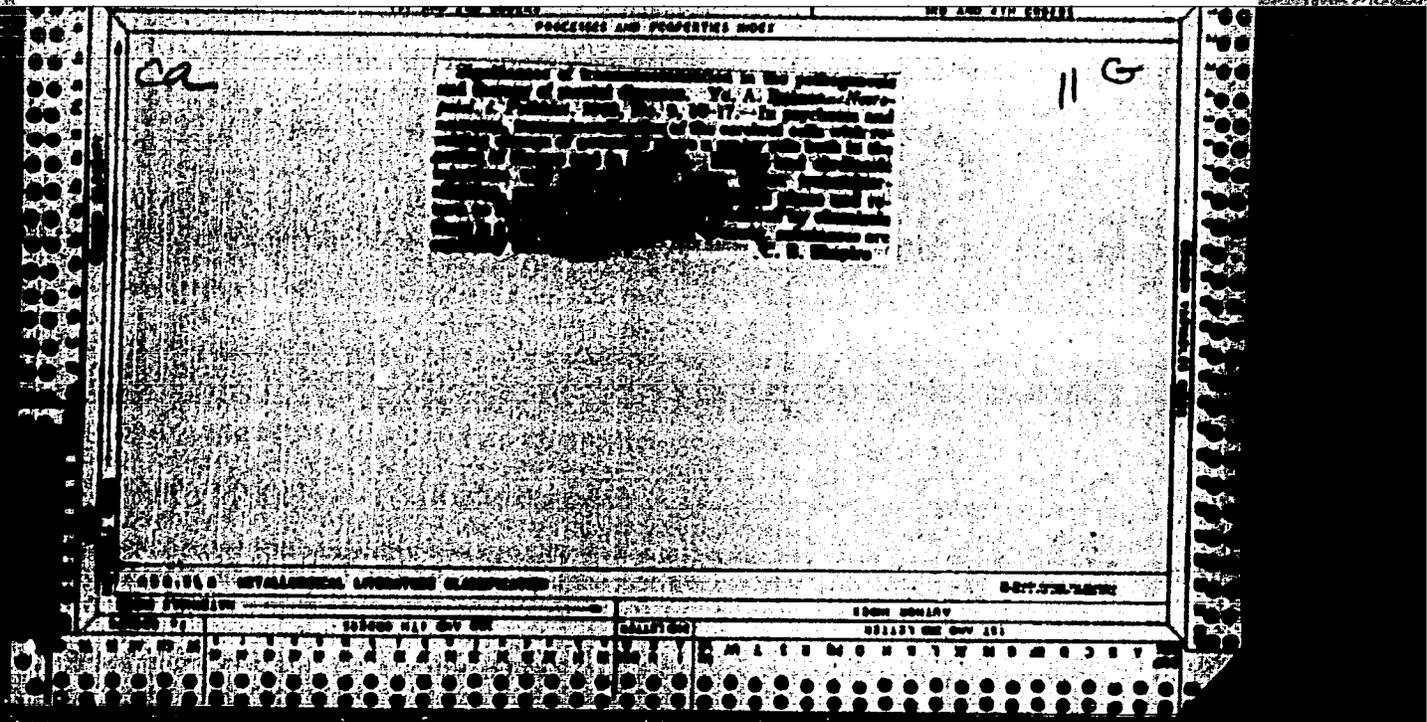
Kolendo oil field on Sakhalin. Neftegaz. geol. i geofiz.  
no.3:38-41 '64. (MIRA 17:5)

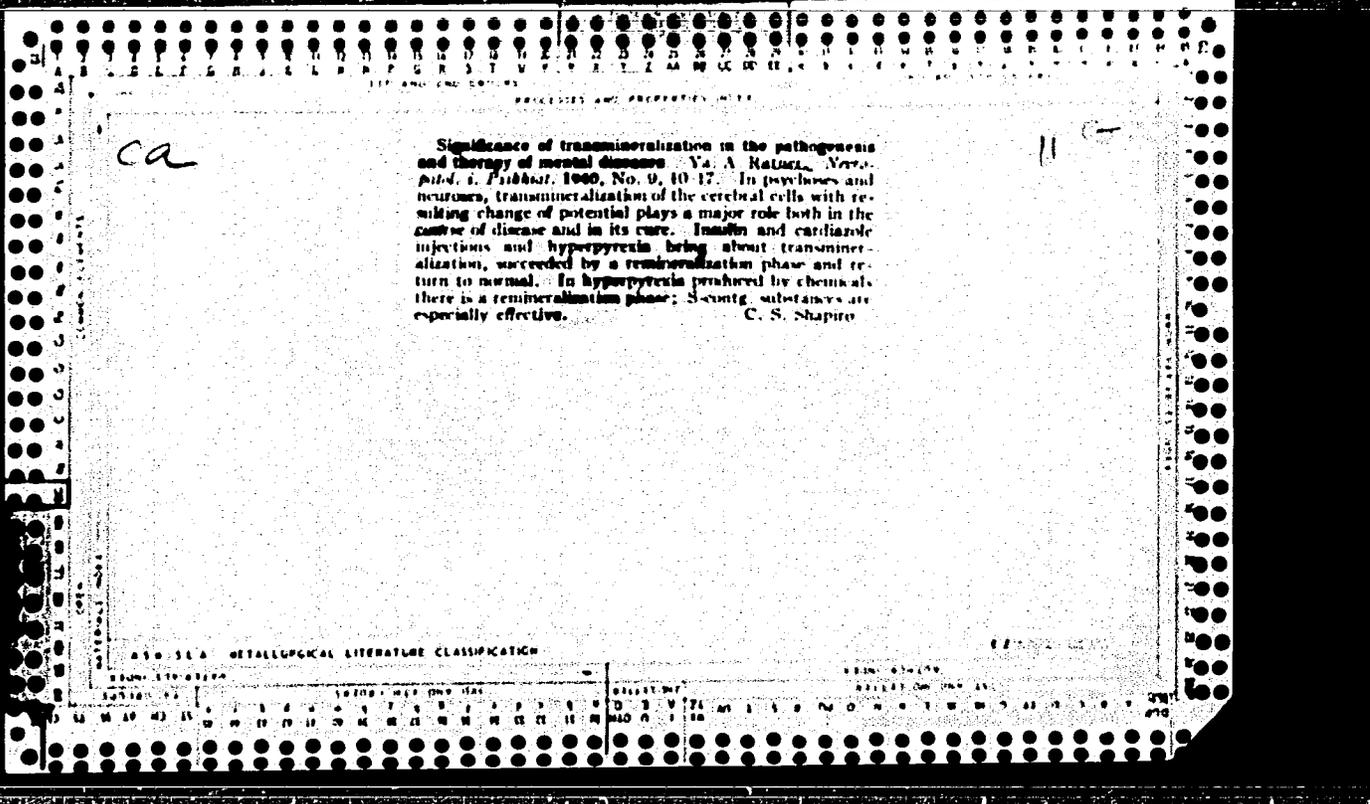
1. Ob'yedineniye "Sakhalinneft'" i Nauchno-issledovatel'skaya  
laboratoriya geologicheskikh kriteriyev otsenki perspektiv  
neftgazonosnosti.

RATNER, V.Ya.

Structural characteristics of Sakhalin oil pools. Geol. nefiti i  
gaza 4 no.8:37-41 Ag '60. (MIRA 13:8)

1. Tsentral'naya nauchno-issledovatel'skaya laboratoriya ob'yedineniya  
Sakhalinneft'.  
(Sakhalin--Petroleum geology)







ISAYEVA, Z.G.; ARBUZOV, B.A.; RATNER, V.V.; POVDYREVA, I.P.

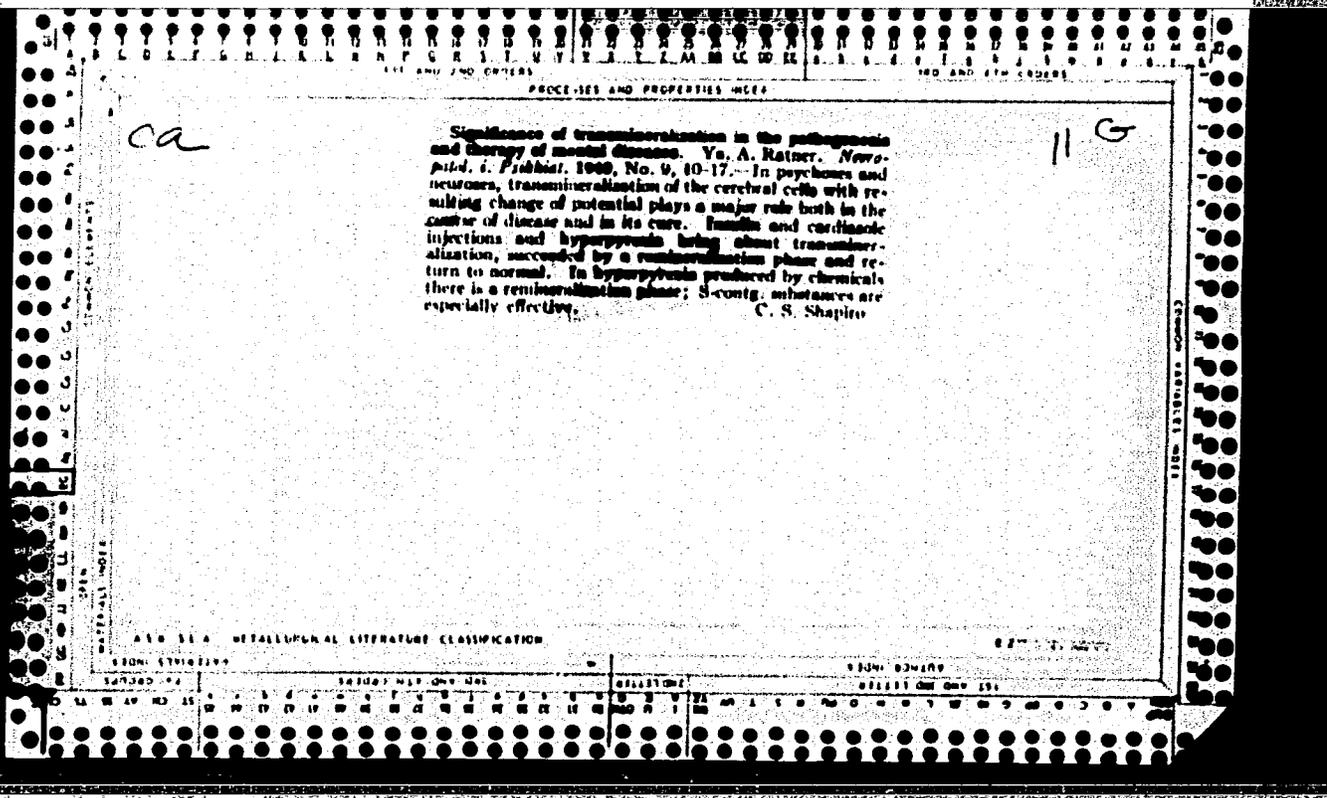
Oxidation of  $\Delta^3$ -carene by mercury acetate. Izv. AN SSSR. Ser. khim.  
no.3:466-475 '65. (MIRA 18:5)

1. Khimicheskiy institut im. A.M.Bu'lerova Kazanskogo gosudarstven-  
nogo universiteta im. V.I.Ul'yanova-Lenina.

ISAYEVA, Z.G.; ARBUZOV, B.A.; RATNER, V.V.

Oxidation of  $\Delta^3$ -carene by selenious acid. Izv. AN SSSR. Ser. khim.  
no.3:475-485 '65. (MIRA 18:5)

1. Khimicheskiy institut im. A.M. Butlerova Kazanskogo gosudarstven-  
nogo universiteta im. V.I. Ul'yanova-Lenina.



SOV/177-58-11-7/50

17(2)

AUTHOR: Ratner, Ya. I., Lieutenant-Colonel of the Medical Corps

TITLE: The Clinical Characteristic of Botkin's Disease

PERIODICAL: Voyenno-meditsinskiy zhurnal, 1958, Nr 11, pp 25 - 27 (USSR)

ABSTRACT: As early as 70 years ago, S.P. Botkin gave a survey on the basic conditions of the so-called catarrhal jaundice. In the meantime, many Soviet authors, including Ye.M. Tareyev, A.L. Myasnikov, and I.A. Kasirskiy, studied the clinic of this disease. In this article, the author reports on the clinical features of Botkin's disease, the difficulties in the early diagnosis and consequently the timely hospitalization of the patients. He bases his treatise on observations of 130 patients who suffered from Botkin's disease and were treated in a hospital in the 1954/55 period. Most of the patients were hospitalized after icterus had appeared instead of hospitalizing them in the preicteric period. On the whole,

Card 1/2

SOV/177-58-11-7/50

The Clinical Characteristic of Botkin's Disease

the disease begins gradually and develops in a dyspeptic form. According to the classification of Ye.M. Tareyev, in 60% of the patients the dyspeptic form of the preicteric period was observed, in 11.5% the pseudo-grippal, in 17% the pseudo-arthritis and in 11.5% the latent form. The quantity of bilirubin in the blood (van den Bergh's test) according to the duration of the icteric period is given in table 1. Relapses of Botkin's disease take an easy course. The complex therapy (confinement to be, diet-glucose-vitamin-therapy, etc) and, in complications, antibiotics gave beneficial results. Most effective is an instillation enema of a 5% glucose solution. There are 2 tables.

Card 2/2

GRINEVICH, G.P., doktor tekhn.nauk; RATNER, Ye.A., kand.tekhn.nauk

Useful manual ("Manual for the designer of industrial, housing, and public buildings and structures.") Reviewed by G.P. Grinevich, E.A. Ratner. Zhel. dor. transp. 43 no.7:96 J1 '61. (MIRA 14:7)  
(Civil engineering)

RTNER, Ye. A.

"Fluorographic Examinations of School Children of the Dzerzhinsk Rayon of Moscow Oblast,"  
Prob. Tuber., No. 3, 1949. Mor., Roentgen and Dispensary Dept., Moscow Oblast Sci. Res.  
Tuberculosis Inst., -c1949-.

НАТОНОВ, Ю. П.

29.39

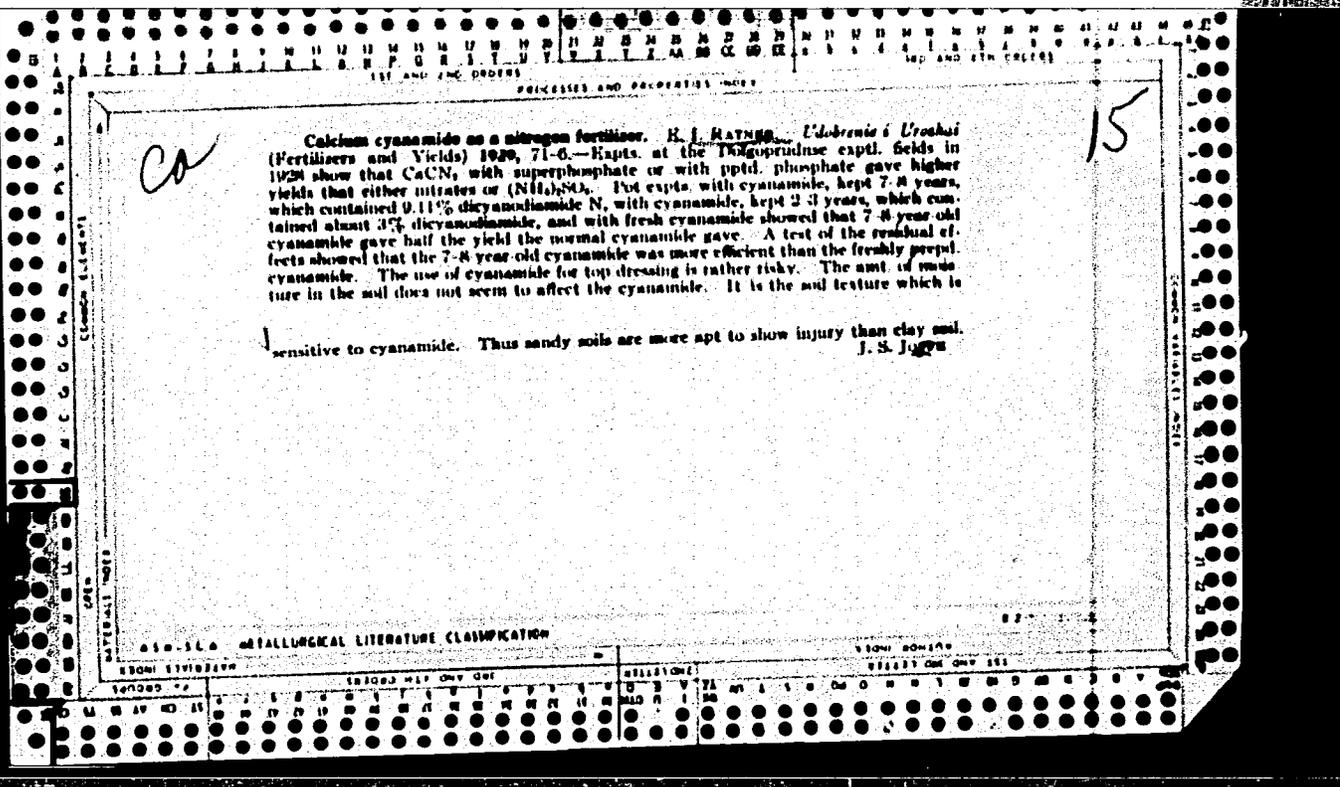
К вопросу о "техном еолоудалыенй у пылеугол'Nykl Kotlov. Ea Eisonomiyu topliva,  
1949, No.9, s.31-32

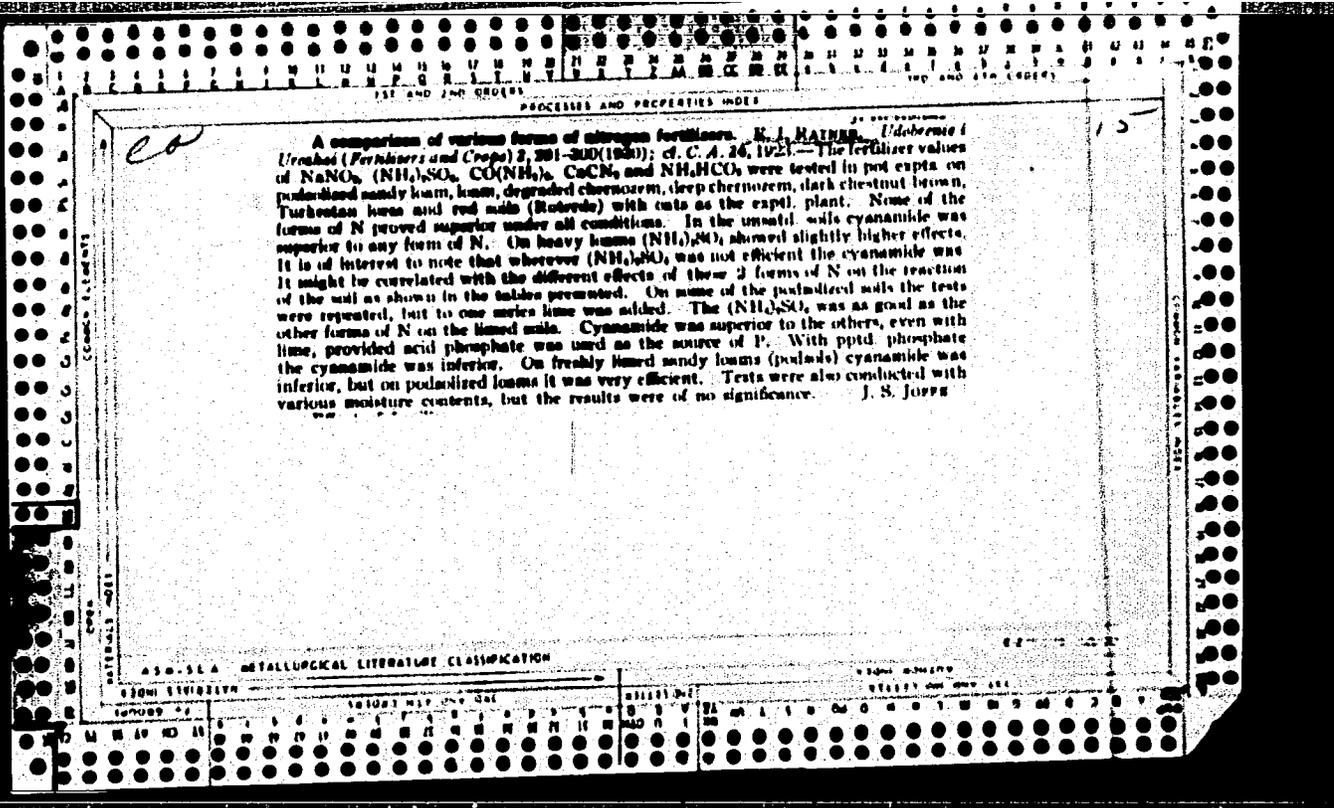
SO: Letonis'No.40

RATNIKOV, Ye.F., dots.

Regularity of the impact effect during percussion hole boring.  
Izv.vys.ucheb.zav.; gor.zhur. no.11:87-96 '58. (MIRA 12:8)

1. Sverdlovskiy gornyy institut.  
(Boring)





PROCESSES AND PROPERTIES INDEX

15

*CA*

The action of calcium cyanamide in relation to the changes which it undergoes during storage and the conditions of use. R. I. Haines and E. E. Magarum. *Trans. Sci. Inst. Fertilizers (U. S. S. R.)* 98, 1-68(1952); *Chimie & Industrie* 51, 267.--On prolonged storage cyanamide undergoes the following changes: decrease in N content, partial conversion of the cyanamide into diacyanamide and urea, loss in lability of the Ca through conversion of Ca(OH)<sub>2</sub> into CaCO<sub>3</sub>. The loss in N content is purely fictitious, being due mainly to increase in wt. through absorption of atm. H<sub>2</sub>O and CO<sub>2</sub>; the absorbed H<sub>2</sub>O takes part in the reactions and cannot be detd. as hygroscopic moisture. The modifications are especially marked in the surface layers, and affect the deeper layers but slightly. Cyanamide that is protected against air and moisture can be stored indefinitely without undergoing any change in compn. Decrease in the N content is accompanied by a decrease in the Ca content, which confirms the fictitious nature of the loss. When a product that has undergone change in compn. during storage is used as fertilizer, ammonification and nitrification are slower than with unchanged cyanamide; the modified product gives considerably lower crop yields with oats, corn and barley, while with buckwheat, mustard, flax and cotton it exerts a noxious action that increases in proportion with the diacyanamide content. A. Papineau-Couture

ASO-3LA METALLURGICAL LITERATURE CLASSIFICATION

15

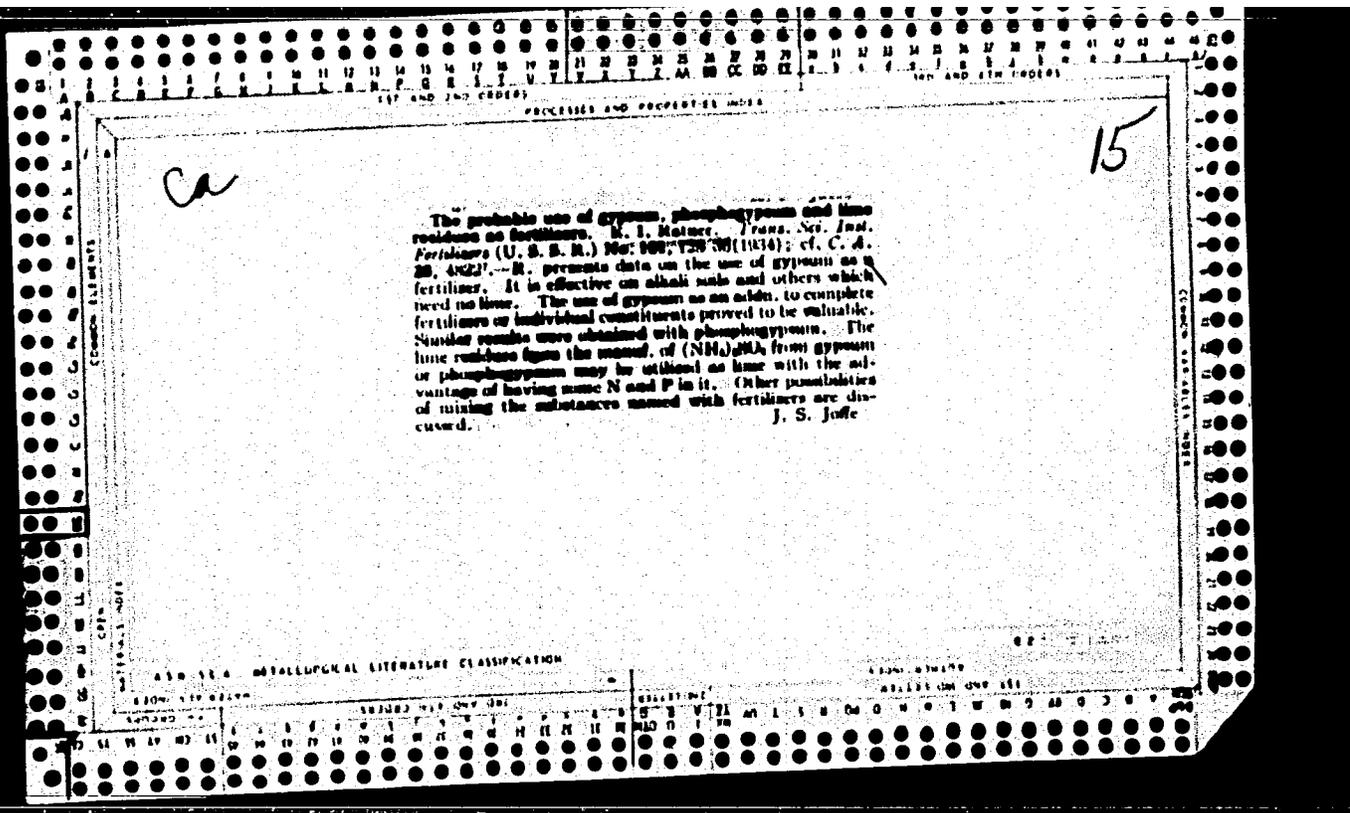
*CA*

PROCESSES AND PROPERTIES INDEX

Lime and gypsum on carbonate-free solonch. B. J. Ratner. *Pedology* (U. S. S. R.) 28, 404-75(1957).  
 R. Y. G. studied the methods of ameliorating a solonch soil with a carbonate-free A horizon and a B horizon satel. with sol. and insol. salts. Caustic lime increased the mineralization of the soil N and slightly raised the  $\rho_n$  in the A horizon. Gypsum and S depressed the mineralization and decreased the  $\rho_n$ . Caustic lime increased the yield of oats on the soil from the A horizon, but decreased it on the soil from the B horizon. Gypsum and S had no influence on the yield either on A or B. The oxidation of S was more effective on the A than the B horizon, 31 against 11.8% in 3.5 months, resp. J. S. Joffe

METALLURGICAL LITERATURE CLASSIFICATION

SOLONCH



117 AND 120 OPER. PROCESSES AND RECEIVERS INDEX 140 AND 141 OPER.

ca

Influence of increasing amounts of exchangeable sodium on growth of plants and assimilation of phosphoric acid from difficultly soluble phosphates. E. J. Ratner. *Trans. Intern. Soc. Soil Sci., Soviet Sect.* 1958, 183-9; *T. C. A.* 30, 3139.—Lab. and pot expts. show that in sodic soils and in reclaimed Na-solonchaks Fe and Al phosphates are the most valuable sources of P<sub>2</sub>O<sub>5</sub>. Phosphorite is not effective. Increase in amount of org. matter increases availability of P<sub>2</sub>O<sub>5</sub> in phosphorite. A. C. A.

15

010-314 METALLURGICAL LITERATURE CLASSIFICATION

Common Elements

Common Variable Elements

140 AND 141 OPER.

100 AND 100 CODES

PROCESSING AND PROPERTIES INDEX

100 AND 100 CODES

COMMON ELEMENTS

MATERIALS INDEX

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**Reduced magnesium silicates (dunite) as fertilizers for acid soils. H. I. Ratner. *Izv. Vsesoyuzn. Inst. Khim. Prikl. Khim.***

*Trakhtovskiy* 1, No. 2, 73-8(1955).—The use of dunite tailings of Pt extr. in the improvement of acid soils is based on the high reactivity of Mg orthosilicate in dunite with acids with the liberation of available Mg and colloidal SiO<sub>2</sub>. Among the advantages of substituting dunite for lime are the proper balance of available forms of Ca and Mg in soil, the sepa. of colloidal SiO<sub>2</sub>, facilitating the assimilation of the soil and fertilizer phosphates by the plants and a slower reaction of soil with dunite than that of lime, eliminating a rapid accumulation of bicarbonates. The last factor is of importance in the cultivation of plants such as flax and tea that react unfavorably to limed soils. Mobilization of N in soil under the influence of dunite progresses more feebly than with lime because of the slower action of dunite on the soil reaction. The influence of dunite on the growth of oat and flax was studied in pots with 6 soils of different acidities fully fertilized with KCl, double superphosphate and (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>. The favorable action of dunite increases with the increasing acidity and decreasing alk. con. of the soils. With chernozem, increasing no marked acidity but great alk. con., the action of dunite was even neg. In 2 comparative tests with flax, the action of dunite was much more favorable than that of CaCO<sub>3</sub>. That this action of dunite is specific for flax and not for the soil is demonstrated by the fact that oats in the same soil reacted more favorably with lime than with dunite. The better results obtained with cultivation of plants, and even of oats, in Krasnodar (Caucasus), poor in P<sub>2</sub>O<sub>5</sub> but rich in Fe<sub>2</sub>O<sub>3</sub> and Al<sub>2</sub>O<sub>3</sub>, on the addn. of dunite are attributed to the action of the dunite SiO<sub>2</sub> on the phosphate nutrition of the plants. Special expts. with dunite and silica gel showed that the action of these agents is greater with Fe phosphate and superphosphate than with phosphorite ppt. Analysis of the plants in these expts. disclosed that dunite and silica gel not only increase the total P<sub>2</sub>O<sub>5</sub> contents of the plants, but cause a greater accumulation of P<sub>2</sub>O<sub>5</sub> in the straw than in the straw with the use of all forms of phosphates. Lab. expts. with lupine, beans, oats and vetch in 3 soils of different acidities (mean peat and 2 kinds of podzol) produced equally good improvement of harvest with the addn. of dunite for the first and second year of growth. The results demonstrate that no excessive accumulation of available Mg at the cost of that of Ca with a harmful effect on the plant growth takes place. Field expts. with potato and vetch-oat demonstrated favorable influence of dunite in the first and second years of harvest. C. B.

450-564 METALLURGICAL LITERATURE CLASSIFICATION

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SEARCHED REF CHE USE

COLLECTIONS

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The influence of exchangeable sodium in soils on the growth of plants and the physical properties of the soil. E. I. Ratur, *Khimicheskiy Sotrudnik. Zemledel'ye* (Moscow) 1933, No. 3, 35-45.—A deep chernozem soil was treated with NaCl of different concns. making up soils with different percentage satns. of Na. It was found that even a 3% satn. with Na affects unfavorably the percolation rates of water, capillary rise of water and dispersion. Injury to plants does not become apparent until 50% satn. At 60-70% satn. the plants died. Soils high in org. matter exhibit the unfavorable properties in a higher degree than soils poor in org. matter. The injury of high-Na soil is partly due to the lack of Ca for plant nutrition. In carbonate-rich soils the limit of Na injury is lower than in soils free from carbonates of Ca or Mg.  
J. S. Joffe

METALLURGICAL LITERATURE CLASSIFICATION

18000 00100

PROCESSES AND PROPERTIES INDEX

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*The utilization of dunnite on acid soils. E. I. Astary. Trans. Sci. Inst. Fertilizers Insectofungicides (U. S. S. R.) No. 129, 16-20(1936).—Dunnite may serve as a neutralizing agent of soil acidity. On chernozem soils its effects were negative. The SO<sub>2</sub> content of straw increases with the use of dunnite. The P content of the straw decreases and of the grain increases when dunnite is used on acid soils. There were no harmful effects of the increased Mg content. Shows of the smelter industry contg. Ca and Mg silicates may be effectively utilized in acid soils. J. S. Joffe*

METALLURGICAL LITERATURE CLASSIFICATION

AGRICULTURE

LIST AND LISTERS

PROCESSES AND PROPERTIES INDEX

1957 AND 1958

15

*Ch*

The utilization of natural silicates obtained from the waste materials of the mining industry and some metallurgical slags as fertilizers. E. I. Ratant. *Norsk Udenrettstidsskrift* 1957, 11(1):26; *Khim. Referat. Zhur.* 1, No. 3, 67 (1958).—Different slags and substances contg. Mg silicates (serpentine, chrysotile, olivine, etc.) obtained from waste materials of the asbestos, Cr-, Mg-, Ni- and Pt-contg. mines can be utilized; they are easily decomposed by acids. In soils with a small  $SiO_2/K_2O$  ratio their addn. not only neutralizes the acidity, but also enriches the soil with colloidal silicic acids. The silicates can be added in small amounts, their effectiveness increasing with the addn. of  $H_3PO_4$ . The slags can be used to neutralize the superphosphate acidity, and for the prepn. of P fertilizers by their interaction with  $H_3PO_4$ , if fused with apatite. The furnace slag is decomposed most easily, and it has a max. neutralizing ability for acid soils. The black serpentine of the lower "Tagil," the dark serpentine of the "Golovorski" mine, chrysotile and olivine also possess neutralizing qualities in the order named.

W. R. Henn

METALLURGICAL LITERATURE CLASSIFICATION

1957 AND 1958

Salinity of the soil and plant life. *E. J. Keenan. Proc. Conf. Soil Sal. Surtor 2, 214-10-1957.* Except in very high concns. the action of NaCl in lowering the fertility of soil is ascribed to adverse modification of its physical properties and to lowering of available soil Ca.  
H. C. P. A.

The availability for plants of exchangeable cations in connection with chemical amelioration of soils. F. I. Ratin, *Bull Acad Sci USSR Div Chem Earth Planet Sci*, 1938, 11:51. (In English, 1981 50) Lab and pot expts show that the influence of different cations on the suppression of availability for plants of exchangeable Ca when Ca is partially replaced by these cations increases in the order: H, Mg, K, Na. For certain soils, especially of the solonch type, an unfavorable Ca diet may be largely responsible for the failure of plants to thrive on these soils. 28 references. (In Russian)

CA

Availability to plants of phosphoric acid of the difficultly soluble phosphates in saline soils. I. I. Babitskiy, N. I. L. F. Storzik "Fiziol. Ucheb. Zhurn. Khim. No. 141, 290-30, 1968; Khim. Rekol. Zhai. 2, No. 3, of 5, 1968. The mobility of  $P_2O_5$  of  $CaH_2PO_4$  and of  $AlPO_4$  increases considerably with the increase of the percentage content of exchangeable Na. The mobility of  $P_2O_5$  of the phosphates changes very little on increase of Na in the soil. The effect of exchangeable Na on the mobility of  $P_2O_5$  of the phosphite in chernozem is considerably greater than in saline soils. With a high content of exchangeable Na in chernozem the mobility of  $P_2O_5$  of apatite increases, but the same with Na decreases the quality of the soil as a medium for the growth of plants. On poor humus horizons of saline soils a noticeable increase of the soly. of  $P_2O_5$  of phosphite takes place only after substitution of 40% of the total exchangeable bases by Na. In saline soils the  $P_2O_5$  in the phosphates of the sesquioxides is sufficiently mobile and is available to plants. The greater the content of the exchangeable Na in the soil the greater the mobility of  $P_2O_5$  of these phosphates. Addn. of gypsum to the saline soils causes a sharp decrease of the availability to plants of  $P_2O_5$ . A large amt. of org. substances increases the effect of exchangeable Na on the soly. of  $P_2O_5$  of the difficultly sol. phosphates. The effect of exchangeable Na on the availability of  $P_2O_5$  in chernozem is very small in comparison with the effect of an equiv. amt. of exchangeable H.

W. R. Hunt

AGRICULTURE - METEOROLOGICAL LITERATURE CLASSIFICATION

RATNER, Ye. I.

"Interaction Between Roots and Soil Colloids as a Problem of the Physiology of Mineral Nutrition of Plants," Dok. AN, 42, No. 7, 1943; K. A. Timiriazev Inst. of Plant Physiol. Mbr. Acad. Sci. c1943-.

RAJNER, YB. I.

"Physiological Effect of Solonchosity of Soils and of the Ameliorative Role of Plant Root Systems on Solonchaks (Alkali Soils)," *Fedology*, No. 1, 1944;

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Physiological effect of micronutrient of soils and of the  
 stimulative role of roots on subsoils. H. T. Ratnes,  
*Ecology* (U. S. N. M.) 1966, No. 6, 203-208 (English,  
 220-7). Seedlings of a no. of plants at different stages of  
 growth were transferred into soil suspensions which had  
 80% Ca and 70% Na in the exchange complex. The  
 plants were grown originally in Hoagberg culture soil,  
 standard strength, varying the level of nutrients available  
 to the plants by growing different nos. of plants, 30, 15,  
 and 6, in the pot. When transferred to the soil suspension  
 the plants were aerated and kept in the suspension for  
 different time intervals, from a few hrs. to 3 days. After  
 that the tops and roots were analyzed for Ca and Na.  
 It was found that plants with a high Ca content gave up  
 some of the Ca to the soil. It is pointed out that in some  
 etc. It is possible that the deleterious effects of Na are in  
 some measure due to the desorption of Ca from the plants.  
 J. S. Ioffe

CA

Interaction between roots and soil colloids as a problem of the physiology of mineral nutrition of plants. I. Unstable equilibria in the cation exchange between the roots of plants and the soil colloids. E. J. Rainier. *Doklady Akad. Nauk S.S.S.R.* 42, 327-31; *Compt. rend. acad. sci. U.R.S.S.* 42, 313-17(1944)(in English).

—The trend of cation exchange between the roots of a plant and soil colloids is dictd. by the degree of satn. of the vegetable tissues with a given cation, on the one hand, and by the degree of satn. and stability of the bond of the same cation in the colloidal complex of the soil, on the other hand. Exptl. evidence concerning the absorption of Ca and K ions by barley shows that highly mobile dynamic equilibria exist in the exchange of cations between the plant and the soil. At any given moment of the plant development, either absorption of a given cation by the plant from the soil or the inverse process (i.e., desorption) may occur.

II. Age variations in the fixing capacity of the plants. *Doklady Akad. Nauk S.S.S.R.* 43, 130-4; *Compt. rend. acad. sci. U.R.S.S.* 43, 126-30(1944)(in English).

—The roots of barley plants, grown in water culture, were exposed, at various stages of development, (1) to a suspension of chernozem satd. 30% with Ca ion and 70% with Na ion or (2) to distl. water. Analysis of the plants showed that the fixing ability of the plants for cations decreased as the plant matured, the change being especially marked on passing to the flowering stage. These observations were correlated with abatement in respiration of the leaves on passing to flowering and with attendant reduction in the extent of participation of H ions in cation interchange between roots and soil.

III. Age variation in the desorbing ability of the plant. Influence of wilting in the case of moisture deficiency. *Doklady Akad. Nauk S.S.S.R.* 44, 111; *Compt. rend. acad. sci. U.R.S.S.* 44,

37-40(1944)(in English). Addnl. expts. show that barley plants, on entering the flowering stage, suffer a sharp reduction in ability to take up cations, e.g., K ions, adsorbed by soil in exchangeable form. Similar adverse effect on the ability of barley to absorb cations was caused by wilting, which, apparently effects changes in the protoplasm similar to those caused by maturing.

J. W. Perry

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1ST AND 2ND COLUMNS      PROCESSES AND PROPERTIES INDEX      1ST AND 2ND COLUMNS

*BC*      *A-4*

**Relationship between water and soil uptake of potassium of various soil suspensions of different soil types. K<sup>+</sup> uptake in various stages of plant growth of various soil types. (Chem. Abstr. Abstr. 28, U.S.S.R., 1966, 68, 69-70; cf. A, 1966, 611, 656).—Uptake of K<sup>+</sup> from soil suspension is much less at the flowering than at the tillering stage of development of barley, whereas the uptake from soil KCI is greater at the flowering than at the tillering stage. A similar decrease in K<sup>+</sup> uptake from soil suspension is shown by barley plants previously watered.**

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ADDITIONAL METALLURGICAL LITERATURE CLASSIFICATION

1966M 210851M      1966M 210851M      1966M 210851M

1966M 210851M      1966M 210851M      1966M 210851M



